

ORIGINAL PROCESS WASTE LINES (OPWL) SUBSURFACE SOIL APPROACH

The characterization and removal approach for the contaminated soil associated with reported or suspected OPWL leaks and associated valve vaults is defined below.

I. GENERAL

All OPWLs within 3 feet of the surface will be removed. Soil contaminated at concentrations above the soil action level for plutonium and americium by any leaks from OPWLs within 3 feet of the surface will be removed to a depth of 3 feet. To minimize the risk of mobilizing and transporting contaminants into subsurface soil, flushing of the OPWL lines is not anticipated or required.

- A. All soils associated with OPWLs that are between 3 and 6 feet deep with reported leak locations will be directly sampled at the reported leak location to 8 feet below the surface. Approximately 27 initial sampling locations based on reported leaks between 3 and 6 feet have been identified. Sampling will consist of biased sampling directly into the soils surrounding the reported leak location. If initial sampling indicates contamination $>3\text{nCi/g}$ plutonium, then subsequent step-out sampling will be performed. Step-out sampling will be approximately two meters on either side of the initial sampling location, perpendicular to the piping run, and between five and ten meters on either side of the initial sampling location in the direction of the piping as indicated in Table A14-1. Additional soil sampling will be designed to adequately characterize soil contamination to implement the soil risk screen in Attachment 5, "RFETS Action Levels and Standards Framework for Surface Water, Ground Water and Soils" (ALF), Figure 3, based on the initial and step-out sample results.
- B. OPWL sections where leaks are suspected to have occurred between 3 and 6 feet below the surface but where specific leak locations are not identified will be characterized. Approximately 58 initial sampling locations based on suspected leaks between 3 and 6 feet have been identified. Sample locations are based on OPWL structures with higher leak potential and material of construction. The sampling strategy for Original Process Waste Line (OPWL) Leaks less than six feet deep with uncertain leak locations is based on the Operable Unit 9 Final Phase I RCRA Facility Investigation/ Remedial Investigation (RFI/RI) Work Plan Dated February 1992. Site walks and interviews were conducted under this work plan in 1994-1995. These identified sampling locations based on the rationale in the RFI/RI work plan. The same locations will be used for sampling sections of the pipeline where the exact location of the leak could not be ascertained. If initial sampling indicates contamination $>3\text{nCi/g}$ plutonium, then subsequent step-out sampling will be performed. Step-out sampling will be approximately two meters on either side of the initial sampling location, perpendicular to the piping run, and between five and ten meters on either side of the initial sampling location in the direction of the piping as indicated in Table A14-1. Additional soil sampling will be designed to adequately characterize soil contamination to implement the soil risk screen in Attachment 5, "RFETS Action Levels and Standards Framework for Surface Water, Ground Water and Soils" (ALF), Figure 3, based on the initial and step-out sample results.

Characterization in accordance with this attachment and in accordance with the Industrial Area Sampling and Analysis Plan (IA SAP), of under building contamination (UBC), potential areas of concern (PACs), other Individual Hazardous Substance Sites (IHSSs), and areas between

- C. IHSS's that are not yet characterized that overlie OPWLs will provide adequate characterization of soils for all other OPWLs. In addition, the RFETS groundwater monitoring network required by ALF Section 3.4 provides analytical data on the presence and mobility of subsurface soil column contaminants. Action determinations for groundwater contamination are made in accordance with ALF Section 3.3. Samples for OPWL will extend to 8 feet below the surface in order to quantify any remaining contamination.

If plutonium concentration is >3 nCi/g between 3 and 6 feet below the surface and the areal or volumetric extent of contamination exceeds the trigger values provided in Table A14-1, DOE shall remove radionuclide contamination to less than 1 nCi/g.

Table A14-1

Contamination Level (nCi/g)	Areal Extent Limit (m ²)	Volume Extent Limit (m ³)	Step-out Sample Locations
7	0	0	None
6	40	25	2m x 5m
5	50	31	2m x 6m
4	60	37	2m x 7.5m
3	80	50	2m x 10m

Areal or volumetric extent of contamination will be determined based on the "step-out" sampling approach described in Sections A & B and Table A14-1. An accelerated action would be triggered if plutonium contamination exceeds the values in Table A14-1 or if contamination from other contaminants of concern pose a lifetime excess cancer risk greater than 1×10^{-5} or a Hazard Index >1 .

- D. An attempt will be made to perform plutonium speciation in the soil contaminated by OPWL leaks at each of 3 locations where known leaks have occurred. This will be done to determine the mobility profile of plutonium in the soil directly around the leaks.
- E. DOE will remove valve vaults down to a minimum of 6 feet below the surface. Valve vaults deeper than 6 feet below the surface will be removed to the extent practicable giving due consideration to the safety of workers (there are approximately 30 total valve vaults). DOE will follow the ER RSOP Notification process for valve vault removal. Practicality is based on three aspects, listed in order of priority - safety, technical, and cost/benefit. These aspects are not necessarily independent. For example, while a condition may arise that makes removing a valve vault unsafe or not technically feasible using normal methods, safety or engineering measures could be implemented to complete the job safely. However, the cost may be prohibitive when weighed against the potential benefit to the refuge worker and the environment. Safety considerations are predominantly associated with confined spaces and working in deep excavations. Technical feasibility includes prohibitions of layback due to other structures and groundwater level. The practical approach includes the following:

1. Evaluate conditions for valve vaults deeper than 6 feet to determine if the potential benefit to the refuge worker and the environment justifies the cost. If costs do not justify complete removal, remove the valve vault to a depth of at least 6 feet.
 2. Evaluate the need for grouting and back filling the remaining portion of the vault and any associated OPWLs.
- F. Once an OPWL or associated valve vault is opened, and where safe and practical, the pipe will be grouted or foamed to minimize the possibility of mobilizing contamination inside the OPWL.

